



CALIFORNIA STATE UNIVERSITY, FRESNO

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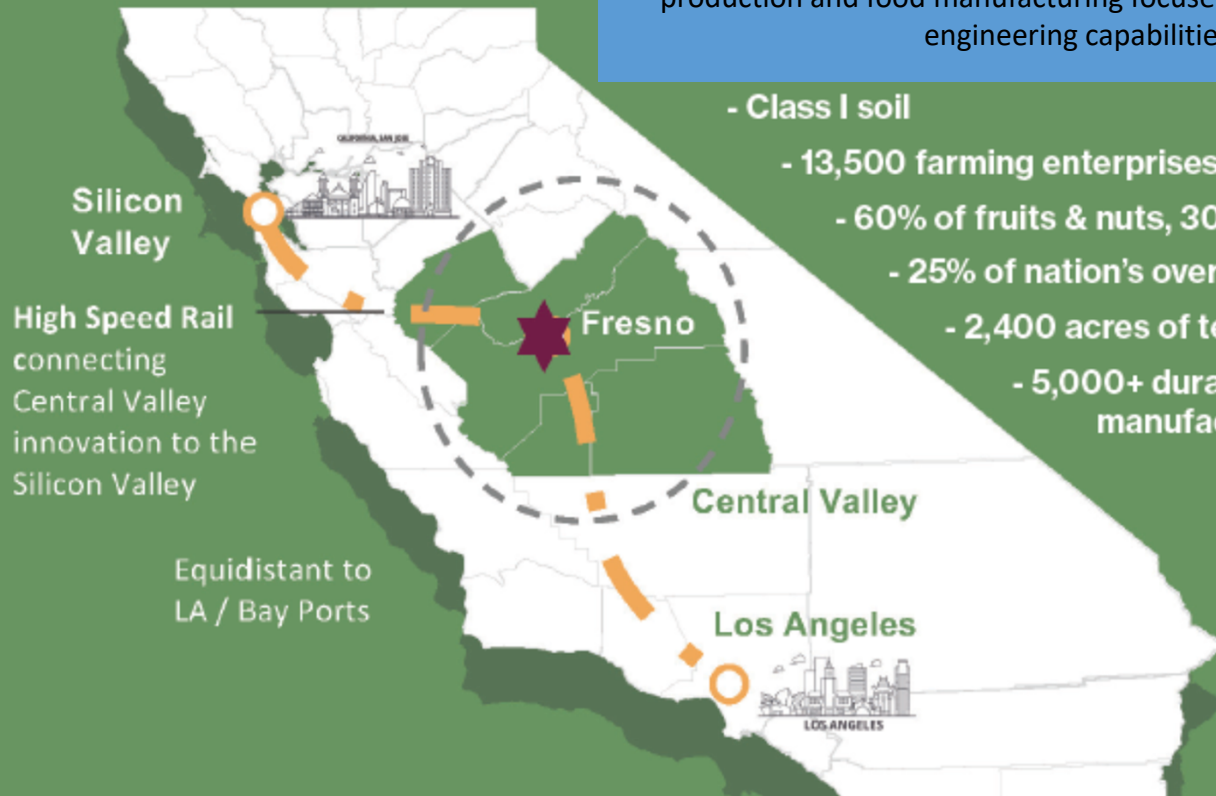


- Fresno State serves nearly 25,000 students
- 80% of our students are from the San Joaquin Valley
- 65% are first in their families to enroll and earn a college degree
- 80% of our graduates remain in the valley after graduation
- Fresno State has received national recognition for graduation rate performance, social mobility and more
- Fresno State has been certified with the 2021 Seal of Excelencia for its efforts to accelerate Latino student success in higher education
- Fresno State is an R2 research intensive university; faculty are research active and receive more than \$45M in grants and contracts each year.
- Fresno State offers 71 bachelor's degrees, 48 master's degrees, and three doctoral degrees



Fresno-Merced Future of Food (F3) Innovation

The objective of Fresno-Merced Future of Food Innovation Initiative (or F3) is to leverage the Fresno-Merced region's industry concentration and expertise to develop a world-class, Climate-Smart Food and Ag Tech Engineering Cluster that develops advanced, sustainable food production and food manufacturing focused on cross-disciplinary engineering capabilities.



- Class I soil

- 13,500 farming enterprises, 5M Acres

- 60% of fruits & nuts, 30% of vegetables in U.S.

- 25% of nation's overall food supply

- 2,400 acres of test farms

- 5,000+ durable & non-durable manufacturers



The F3 VISION: Developing, Commercializing, and Manufacturing “Climate - Smart Agrifood Technology”

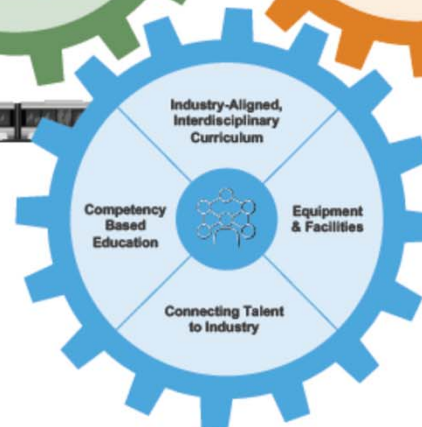
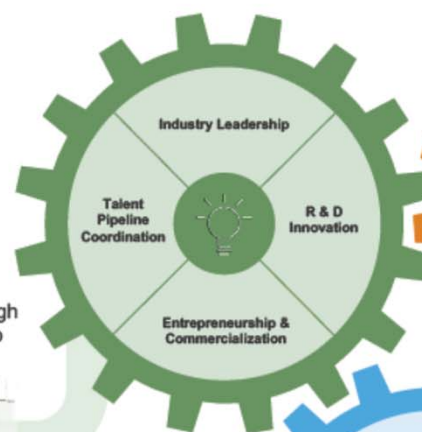
iCREATE

*Tech-based economic
development and
diversification*

Complementary Investment: CA High
Speed Rail - Connecting the region to
Silicon Valley's innovation resources

Partner Integration & Collective Impact

*Partner coordination, community
engagement, measurement, and
evaluation*



Local Farm & Food Innovation

*Resilient local food system
that drives adoption of
sustainable technology
and practices*









Opportunity Walkway
Pedestrian access to iCREATE
and jobs in Region's economic center



AgTEC

Regional talent development pipeline

F3 Component Project Descriptions

Component Project	Project Descriptions
 1 ICREATE	<ul style="list-style-type: none"> Agrifood Tech and Engineering Cluster hub with 4 pillars (Industry Leadership; Innovation; Commercialization; Talent Pipeline Coordination) that catalyze innovation, 3,500 jobs and >\$250M in private investment
 2 Local Farm & Food Innovation	<ul style="list-style-type: none"> Driving inclusive economic growth of small-to-large scale farmers and food entrepreneurs, achieving a 40% adoption rate of new economically, environmentally sustainable technologies and key contributor to \$250M in private investment
 3 SIEMBRA Food Fund	<ul style="list-style-type: none"> \$4.5M revolving loan fund to expand BIPOC-owned farms and food businesses
 4 Ag-TEC Workforce Initiative	<ul style="list-style-type: none"> Regional workforce collaborative of 8 community colleges building industry-aligned agrifood tech pathways for >8,000 workers, including 4,000 incumbent workers, increasing salaries by 60%
 5 Reedley Innovation Center	<ul style="list-style-type: none"> 9,000 SF for industry, tech, and workers to test and demonstrate technologies focused on grapes, citrus, and stone fruit
 6 Merced Innovation Center	<ul style="list-style-type: none"> 15,000 SF for industry, tech, and workers to test and demonstrate food processing systems
 7 Opportunity Walkway	<ul style="list-style-type: none"> Public walkway connecting disinvested neighborhoods to jobs & opportunity in Downtown Fresno, the region's economic center
 8 Partner Integration	<ul style="list-style-type: none"> Collective impact of F3 investments through integration, community engagement, and shared measurement and evaluation

Alignment to CEDS goals



Creation of quality jobs:

innovations and industry-aligned workforce driving increased productivity, income-levels, and employment growth



Development of a skilled workforce:

interdisciplinary, industry-aligned and recognized training upskills existing workforce and develops next-gen innovators and agri-food tech workers



Enhancement of regional economic development and competitiveness:

regional food industry collaboration enabling a diversified resilient economy

Complementary Initiatives — F3 is a central component of a broader, inclusive economic development strategy for investments being made in the Fresno-Merced region. Major complementary initiatives include:

Financial Support from the State of California and Renovation of iCREATE Headquarters – The State of California has been the lead investor in F3 committing \$32M in seed funding. As documented across the F3 component applications, \$14.25M of the State’s initial investment is being provided as a direct match to the BBBRC proposals. The remaining funding will enable the renovation of a 65,000 SF historic building in Downtown Fresno near High Speed Rail to serve as the headquarters for iCREATE.

Fresno DRIVE (Developing the Region’s Inclusive and Vibrant Economy) Initiative: F3 is one of 14 initiatives that comprises DRIVE’s 10-year, \$4.2B community investment plan, which has attracted nearly \$100M in philanthropic and public capital to support small businesses, civic infrastructure, the K-16 pipeline, and early childhood initiatives.

California’s Community Economic Resilience Fund (CERF): Fresno DRIVE’s equity-centered model of inclusive economic development inspired the State of California to create the \$600M CERF for regional economic development plans like DRIVE. F3 projects may be eligible for complementary investments from CERF.

California High Speed Rail (HSR): The \$6.8B Central Valley segment of HSR will connect Fresno and Merced in less than 30 minutes by 2029 and the Central Valley to San Jose in less than an hour by 2031 providing Central Valley innovators access to the Silicon Valley.

Community College Investment: Over \$40M has been invested in the last 24 months in the agrifood tech-aligned facilities and equipment at the region’s community colleges.

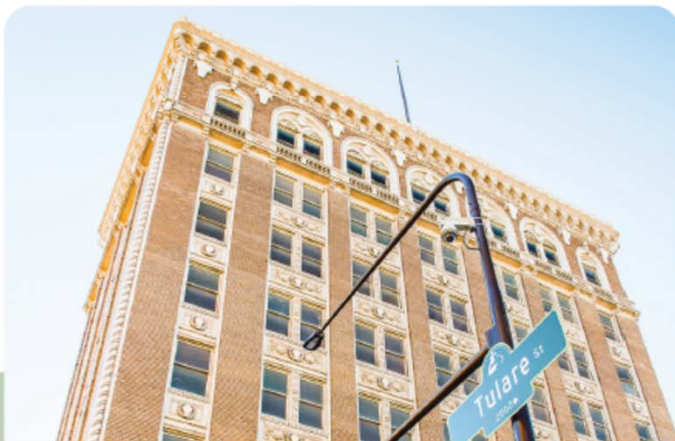
Research Funding Awards: UC Merced, Fresno State, and UC ANR have been awarded \$160M in collective funding for agrifood tech research over the last two years.

EDA Awards for Related Projects: Merced College, Fresno City College, and the Fresno Area Hispanic Foundation are being awarded \$6M in EDA grants to support F3-aligned programs. The VINE Network was awarded \$2.8M to UC ANR by EDA.

Philanthropic Support: The James Irvine Foundation has made 3 grants in the last 3 months in support of grassroots leadership in Fresno DRIVE and other economic justice initiatives. This support includes engaging USC’s Equity Research Institute to assist F3 with data and analysis of opportunities and barriers in the agrifood tech industry, and to build collective impact infrastructure that can be leveraged by F3.



Industry Leadership
R & D Innovation
Talent Pipeline Coordination
Entrepreneurship & Commercialization



Innovation Center for Research and Entrepreneurship in Ag Technology & Engineering

- **Hub for industry cluster development**
- **Public private partnership**
- **\$46M investment over 4 years:**
 - ~ 100 applied ag tech products & services
 - ~ \$250M in private sector capital
 - ~ 30 fast growing businesses & ~3500 jobs
- **Investable Components:**
 - Mobilizing industry
 - R & D
 - Entrepreneurship & commercialization support
 - Talent pipeline coordination



Target Technologies

Digitalization and Data Science

- Predictive Analytics
- Artificial Intelligence
- Edge Computing
- Environmental Remote Sensing

Mechatronics

- Cyberphysical Systems
- Automation and Robots
- Internet of Things
- Digital Twins

Equipment and Manufacturing

- Agrivoltaics
- Energy-Water Systems
- Biomass Processing
- Complex Logistics

Systems Integration and Implementation

- Test Beds and Validation for Third-Party Products
- Small and Mid-size Producer Problem-Solving, Information, and Access
- Online Marketing Platforms
- Aggregation & Distribution Systems

Target Applications

Precision Agriculture

- Precision irrigation and nutrition
- Precision pest management
- Soil health management
- Carbon monitoring

Farm Automation

- Precision spray & weeding
- Robotic harvesting
- Precision thinning & pruning
- Electric/autonomous tractors
- Dairy and livestock robotics

Smart Food Processing

- Real-time food safety
- Plant automation
- Waste upcycling
- Energy recapture
- Emissions monitoring

Small-Scale Farm and Food Tech

- Handheld and miniaturized equipment
- Small field robots
- Farm management software
- Low cost and biodegradable sensors
- Mobile apps for small food vendors

Knowledge Creation, Feedback, and Scaffolding >> Market Research & Cost-Benefit Analyses

F3's location and region

F3 will primarily serve California's 5-county Central Valley region, which includes Fresno, Kings, Madera, Merced, and Tulare Counties.

The 16,000 square mile region is home to over 2M people living in 108 cities, towns, and unincorporated areas.

This region aligns with EDA's focus on equitable recovery from the pandemic and persistently impoverished regions.

Approximately 70% of Central Valley residents identify as BIPOC. Fresno is the geographic and population center of the region with over 1.02M residents where the economy ranks 268th of 274 large cities nationwide for economic inclusion

F3 Regional Assets

Tapping into California's distinctive assets and serving the world



Downtown Fresno – iCREATE headquarters

Diverse manufacturing base with over 5,300 manufacturers that are outpacing the growth of manufacturing in the state and nation

World class universities, colleges and cooperative extension programs

- 2 public universities
- Largest cooperative extension system in the U.S. with 1,300 agrifood experts
- 8 community colleges

World's largest supply of Class I soil

- 13,650 farming enterprises
- 350 commodities
- \$70B in ag revenue
- Diverse microclimates and deposits of rich sediments

5 million acres of irrigated farmland

- 60% of nation's fruits
- 30% of nation's vegetables

Network of test farms, laboratories and outdoor classrooms for production and talent development

- Over 2,400 acres of test farm facilities
- 30 centers and institutes with dedicated staff
- Statewide and national industry networks

University Assets

Fresno State and UC Merced



Fresno State Assets

- Jordan College of Agricultural Sciences and Technology
- Lyles College of Engineering
- College of Science and Mathematics
- 1000 acre university farm
- WET Center – supports water, energy, ag-tech entrepreneurs
 - Hundreds of companies supported
 - Over \$200M in public/private funding
 - Over 550 new jobs created
- California Water Institute
- Fresno State Transportation Institute
- Center for Irrigation Technology
- Various other research laboratories

Key Outcomes:

- Innovation
- R&D Partnerships
- Expanded entrepreneurial partnerships
- Workforce development



Industry Partnership Commitments to F3

Industry Partner	Description	Annual Industry or Firm Hiring Needs	F3 Partnership Commitments
Agriland	Farming 31,000 acres in 5-county region	800	✓
Almond Board of CA	Association representing 7,000 almond growers	100,000	✓
Blue Diamond Growers	Almond co-op representing 3,000 growers	1,400	✓
California Citrus Mutual	Association representing 2,500 growers	20,000	✓
California Cotton Ginners & Growers	Association representing 1,000 employers	11,000	✓
California Fresh Fruit Association	Association representing 350 employers; 100,000 employees	Approx. 100,000	✓
California League of Food Processors	Association representing hundreds of processors and 200,000 workers	15,000	✓
HMC	Stone fruit grower	500-1,500	✓
Western Growers Association	Association representing 2,000 growers	1,000	✓
Wonderful Company	Grower/Producer – almonds, citrus, pistachios, pomegranates, wine grapes, nursery stock	>1,000	✓

Implementation Partners in F3 Component Applications

California Farmworker Foundation (CFF): CFF represents 5,000 farm and field workers in California's Central Valley and Coachella Valley and will help ensure workers are included in designing and implementing the AgTEC workforce initiative.

Community Alliance with Family Farms (CAFF): Founded in 1978, CAFF builds sustainable farming and food systems and will support implementation of the Local Farm and Food Innovation (LFFI) component application.

Cultiva La Salud: Cultiva La Salud creates health equity in the Central Valley by fostering changes in communities that support healthy eating and active living. Cultiva is an implementation partner in the LFFI application.

Fresno Area Hispanic Foundation (FAHF): FAHF, a U.S. Treasury certified community development financial institution, has been assisting low-income entrepreneurs with their business development needs since 2004. FAHF is the project lead for the SIEMBRA Food Fund. In this role, FAHF will provide invaluable services and insight to the cluster on the needs of micro-enterprises in the food and ag sector.

Fresno Metro Ministry: Since 1970, Fresno Metro Ministry has led community advocacy for health and well-being and is an implementing partner in the LFFI

RETHINKING CLUSTER INITIATIVES

Ryan Donahue
Joseph Parilla
Brad McDearman

July 2018

B | Metropolitan Policy Program
at BROOKINGS

Five Traits of Successful Cluster Initiatives

1. Focused on establishing a robust ecosystem, not quick job gains
2. Industry-driven, university-fueled, government funded
3. Placing a collective big bet on a unique opportunity
4. Championed by passionate dedicated leaders
5. Anchored by a physical center

